INDIGOSOL DYEINGS
ON WOOLEN YARN

GENERAL DYESTUFF CORPORATION
230 Fifth Avenue
NEW YORK
Boston Philadelphia Chicago
Providence Charlotte San Francisco

Sol. K. 43

Preface.

The purpose of this card is to draw the attention of all dyers of wool yarn to the Indigosol range of dyestuffs, of which certain of the blue brands are already being used on a large scale.

For many purposes of fast wool dyeing the good properties of the Indigosols, namely of yielding very brilliant dyeings which, even in pale shades, are of very good fastness to light, washing, milling and salt-water, are of special interest. Pale shades, clear pearl, lilac, violet and grey shades for effects in particular were very difficult to produce on yarn hitherto, because the desired brilliancy of shade and fastness to washing can only be obtained with chrome dyestuffs provided concessions are made with regard to the fastness to light. However, the Indigosols are also used to advantage for the production of dyeings of good fastness to light, washing and water on knitting and carpet yarn. In view of their excellent fastness to salt-water the Indigosols represent a decided advance in the production of fast to salt-water bathing costumes, an article which is steadily growing in importance.

In the dyeing of woolen piece goods the blue brands, Indigosol O and OR, are of chief interest, as they render possible the production of indigo-dyed goods on the winch. Both brands yield the indigo test and do not stain cotton lists, so that the dyeings produced with their aid give the impression of being dyed in the wool. When Indigosol Soap SP is used in conjunction with Indigosol O and OR, the fastness to rubbing of dark navy blue shades is a very good one. The two brands named are also very suitable for the production of indigo grounds which are subsequently topped with Acid or Chrome dyestuffs. The very brilliant red Indigosols will be found very advantageous for the dyeing of cloth for uniform caps and facings, also for bunting, the excellent fastness to light and washing essential for these goods being met by the use of Indigosols.

As the Indigosols are very fast to milling and the other manufacturing processes, they may also be used for the dyeing of loose wool and tops.

General Dyestuff Corporation

Dyeing Process I.

(Dyeings 1—6).

Dissolve the dyestuff by pouring hot water over it and pour the solution [1]) into the dyebath. Then add:

5% Glauber's salt calc. [2])
1% Rongalite C
3—8% acetic acid 30%, for pale shades, i. e. up to 5% dyestuff, or
3—6% formic acid 85%.

Enter the goods at 105° F., raise to the boil and continue boiling for 1/2 hour. Then exhaust the bath by adding

2% sulphuric acid 96% (168° Tw.),

boil for 3/4 hour, and cool down to about 75° F. by running in fresh water.

Set the **developing bath** with

7 parts sulphuric acid 96% (168° Tw.) per 1000 parts liquor,

for improving the fastness to rubbing add

2—4 parts Indigosol Soap SP per 1000 parts liquor

in the case of full shades, and run cold for 10 minutes. Then add in the form of a dilute solution

Indigosol O		for
0.4%	sodium nitrite	1% dyestuff or less
0.8%	" "	4% "
1.6%	" "	10% "
2.7%	" "	20% "

Indigosol OR [3])		for
0.3%	sodium nitrite	1% dyestuff or less
0.7%	" "	4% "
1.4%	" "	10% "
2.4%	" "	20% "

Then treat

Indigosol O dyeings for 1 hour at 75° F.,
" OR " " 3/4 " " 120° F.,

after having raised the temperature gradually to these figures. Finish by rinsing thoroughly, if necessary neutralize cold with 2 parts soda ash per 1000, and rinse once more.

Dyeing Process II.

(Dyeings 7—60).

After dissolving the dyestuff [1]) by pouring hot water over it, add it to the dyebath together with 5% sulphate of ammonia, enter the goods at 105° F., raise to the boil in 1/2 hour and continue boiling for 1/2 hour. Then exhaust the dyebath by adding 1—10% acetic acid 30% and boil for 1/2—1 hour; rinse.

Set the **developing bath** with

1—3 % sulphocyanide of ammonia [4]) and
0.7—3.5% bichrome [5])

and run for 1/4 hour at 85° F. Then add

5 parts sulphuric acid 96% (168° Tw.) per 1000 parts liquor,

and treat for 1/2 hour at 185—195° F. The final operations are the same as under I.

For shading, use the acid-dyeing shading dyestuffs usual for chrome dyeings.

Notes:

[1]) The dyestuff solution should not be boiled up.

[2]) For full shades, the Glauber's salt may be omitted.

[3]) Combinations of Indigosol O and OR are developed at 120° F. with the quantities of nitrite indicated for Indigosol O.

[4]) Sulphocyanide of ammonia (1% for pale and medium, 2% for full shades) is recommended whenever the shade is to be as brilliant as possible, or when excessive oxidation of the dyestuff is to be avoided. When using several dyestuffs whose bichrome requirements differ widely, up to 3% sulphocyanide of ammonia are used.

[5]) The requisite quantities of bichrome are:

at least	for 1—2% dyestuff	for 2—5% dyestuff
0.7%	1—2%	2—3%

However, the brands enumerated below require the following quantities of bichrome:

	at least	for 1—2% dyestuff	for 2—5% dyestuff
Indigosol Scarlet IB . . .	0.7%	0.7—1%	1—2.2%
Indigosol Golden Yellow IGK Indigosol Pink IR extra . . Indigosol Scarlet HB . . .	1.1%	1.4—2.2%	2.2—3%
Indigosol Brilliant Pink I3B Indigosol Red Violet IRH .	1.3%	1.7—2.5%	2.5—3.5%

To ensure the dyeings being fully developed it is advisable, with compound shades, not to go below the minimum quantity of bichrome of that dyestuff which requires most bichrome.

Fastness Properties of the Indigosol Dyestuffs.

	Light	Washing	Water	Rubbing	Hot Pressing	Stoving	Perspiration	Alkali	Acid Boiling	Bleaching	Milling	Carbonizing	Potting	Decatizing	Salt-water
Indigosol Golden Yellow IGK	7	4	5	3	3—4	4	4	4	4	4—5	4—5	4—5	4	3—4	5
Indigosol Scarlet IB . . .	7—8	5	5	3	3—4	4	5	4	4	4—5	5	4—5	4—5	4	5
Indigosol Scarlet HB . . .	6—7	5	5	3	3—4	4—5	5	4—5	4	4—5	5	4—5	4—5	4	5
Indigosol Pink IR extra . .	7	5	5	3	3—4	4—5	5	4—5	4	4—5	5	4—5	4—5	3—4	5
Indigosol Brilliant Pink I3B	7—8	5	5	3	3—4	4	5	4—5	4	4—5	5	4—5	4—5	3—4	5
Indigosol Red Violet IRH .	8	5	5	3	3—4	4	5	4—5	4	4—5	5	4—5	4—5	3—4	5
Indigosol Violet ABBF . .	7	5	5	3	3—4	4	5	4—5	4	4—5	5	4—5	4—5	3—4	5
Indigosol O	8	5	5	3	3—4	4	5	4—5	4	4—5	5	4—5	4—5	3	5
Indigosol O4B	7—8	5	5	3	3—4	4	5	4—5	4	4—5	5	4—5	4—5	3	5
Indigosol O6B	7	5	5	3	3—4	4	5	4—5	4	4—5	5	4—5	4—5	3	5
Indigosol Blue AGG . . .	8	5	5	3	3—4	4	5	4—5	4	4—5	5	4—5	4—5	3—4	5
Indigosol OR	8	5	5	3	3—4	4	5	4—5	4	4—5	5	4—5	4—5	3	5
Indigosol Green AB . . .	7	4—5	5	3	3—4	4	5	4	4	4—5	5	4—5	4—5	3—4	5
Indigosol Brown IRRD . .	8	5	5	3	3—4	4	5	4—5	4	4—5	5	4—5	4—5	3—4	5

The figures signify:

for fastness to light:			for all other properties:
1	=	Poor	= 1
3	=	Moderate	= 2
5	=	Good	= 3
7	=	Very good	= 4
8	=	Excellent	= 5

— Without guarantee —

Indigosols on Woolen Yarn

No. 11
1 % Indigosol Scarlet IB
0.7% bichrome

No. 12
4 % Indigosol Scarlet IB
2 % bichrome

No. 13
0.5% Indigosol Scarlet HB
1 % sulphocyanide of ammonia
1.1% bichrome

No. 14
2 % Indigosol Scarlet HB
1 % sulphocyanide of ammonia
2.2% bichrome

No. 15
0.5% Indigosol Pink IR extra
1 % sulphocyanide of ammonia
1.1% bichrome

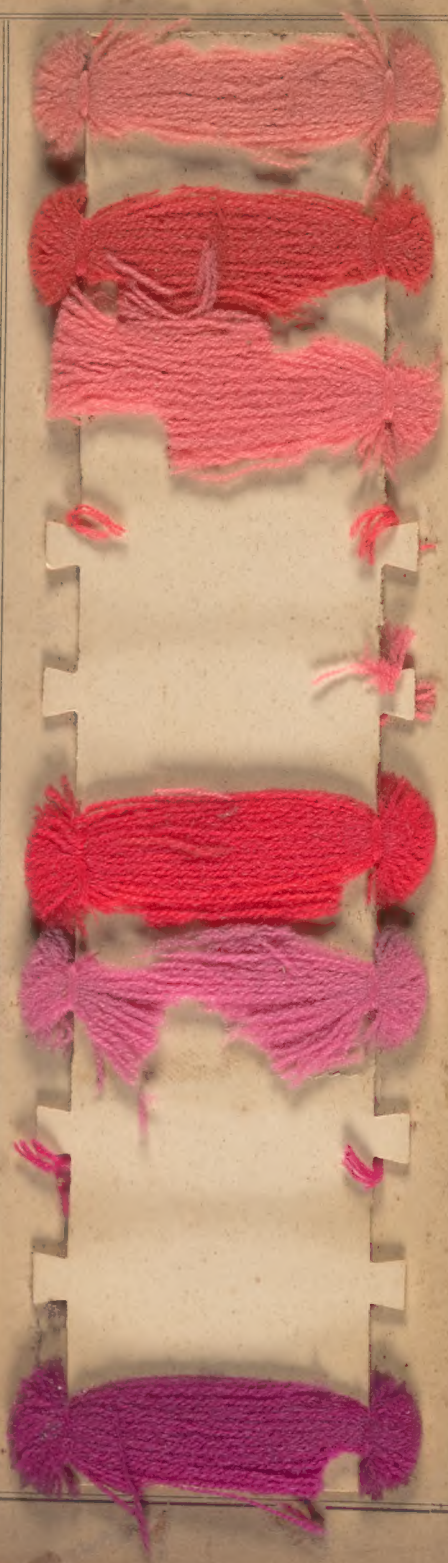
No. 16
2 % Indigosol Pink IR extra
1 % sulphocyanide of ammonia
2.2% bichrome

No. 17
0.5% Indigosol Brilliant Pink I3B
1 % sulphocyanide of ammonia
1.3% bichrome

No. 18
2 % Indigosol Brilliant Pink I3B
1 % sulphocyanide of ammonia
2.5% bichrome

No. 19
0.5% Indigosol Red Violet IRH
1 % sulphocyanide of ammonia
1.3% bichrome

No. 20
2 % Indigosol Red Violet IRH
1 % sulphocyanide of ammonia
2.5% bichrome



Indigosols on Woolen Yarn

No. 21
0.5% Indigosol Violet ABBF
1 % sulphocyanide of ammonia
0.7% bichrome

No. 22
2 % Indigosol Violet ABBF
1 % sulphocyanide of ammonia
2 % bichrome

No. 23
0.5% Indigosol O4B
1 % sulphocyanide of ammonia
0.7% bichrome

No. 24
2 % Indigosol O4B
1 % sulphocyanide of ammonia
2 % bichrome

No. 25
0.5% Indigosol O6B
1 % sulphocyanide of ammonia
0.7% bichrome

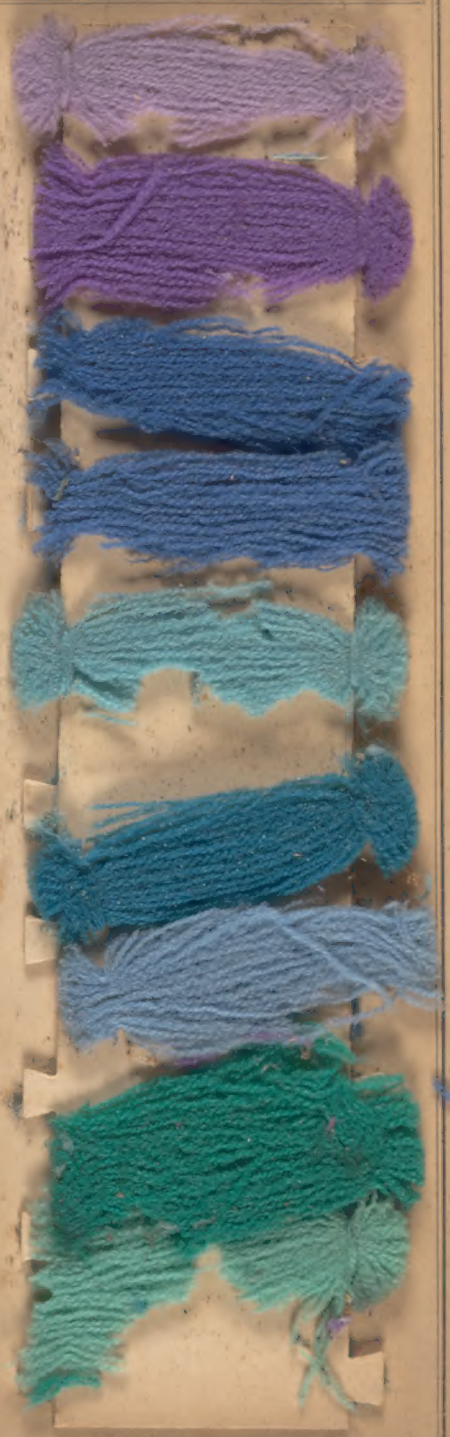
No. 26
2 % Indigosol O6B
1 % sulphocyanide of ammonia
2 % bichrome

No. 27
0.5% Indigosol Blue AGG
1 % sulphocyanide of ammonia
0.7% bichrome

No. 28
2 % Indigosol Blue AGG
1 % sulphocyanide of ammonia
2 % bichrome

No. 29
0.5% Indigosol Green AB
1 % sulphocyanide of ammonia
0.7% bichrome

No. 30
2 % Indigosol Green AB
1 % sulphocyanide of ammonia
2 % bichrome



Indigosols on Woolen Yarn

No. 31
0.07% Indigosol Violet ABBF
0.01% Indigosol Blue AGG
1 % sulphocyanide of ammonia
0.7 % bichrome

No. 32
0.2 % Indigosol Golden Yellow IGK
0.02% Indigosol Green AB
2 % sulphocyanide of ammonia
1.1 % bichrome

No. 33
0.1 % Indigosol Brilliant Pink I3B
0.05% Indigosol Violet ABBF
1 % sulphocyanide of ammonia
1.3 % bichrome

No. 34
0.1 % Indigosol Blue AGG
0.2 % Indigosol Scarlet IB
0.4 % Indigosol Brown IRRD
0.8 % bichrome

No. 35
0.2 % Indigosol Brilliant Pink I3B
0.2 % Indigosol Scarlet HB
2 % sulphocyanide of ammonia
1.3 % bichrome

No. 36
0.1 % Indigosol Blue AGG
0.05% Indigosol Red Violet IRH
3 % sulphocyanide of ammonia
1.3 % bichrome

No. 37
0.15% Indigosol Scarlet HB
0.1 % Indigosol Golden Yellow IGK
1 % sulphocyanide of ammonia
1.1 % bichrome

No. 38
0.12% Indigosol Violet ABBF
0.03% Indigosol Pink IR extra
2 % sulphocyanide of ammonia
1.1 % bichrome

No. 39
0.2 % Indigosol Blue AGG
0.05% Indigosol Pink IR extra
2 % sulphocyanide of ammonia
1.1 % bichrome

No. 40
1 % Indigosol Scarlet HB
0.5 % Indigosol Golden Yellow IGK
1 % sulphocyanide of ammonia
1.8 % bichrome

Indigosols on Woolen Yarn

No. 41

0.15% Indigosol Brown IRRD
0.03% Indigosol Golden Yellow IGK
1 % sulphocyanide of ammonia
1.1 % bichrome

No. 42

0.25% Indigosol Brilliant Pink I3B
0.05% Indigosol O4B
2 % sulphocyanide of ammonia
1.3 % bichrome

No. 43

0.05% Indigosol Blue AGG
0.1 % Indigosol Golden Yellow IGK
0.5 % Indigosol Brown IRRD
1 % sulphocyanide of ammonia
1.1 % bichrome

No. 44

0.25% Indigosol Blue AGG
0.05% Indigosol Scarlet IB
0.06% Indigosol Brown IRRD
0.8 % bichrome

No. 45

0.2 % Indigosol O4B
0.05% Indigosol Red Violet IRH
3 % sulphocyanide of ammonia
1.3 % bichrome

No. 46

0.4 % Indigosol Pink IR extra
0.1 % Indigosol Red Violet IRH
2 % sulphocyanide of ammonia
1.3 % bichrome

No. 47

1 % Indigosol O4B
0.5 % Indigosol Violet ABBF
1 % sulphocyanide of ammonia
1.5 % bichrome

No. 48

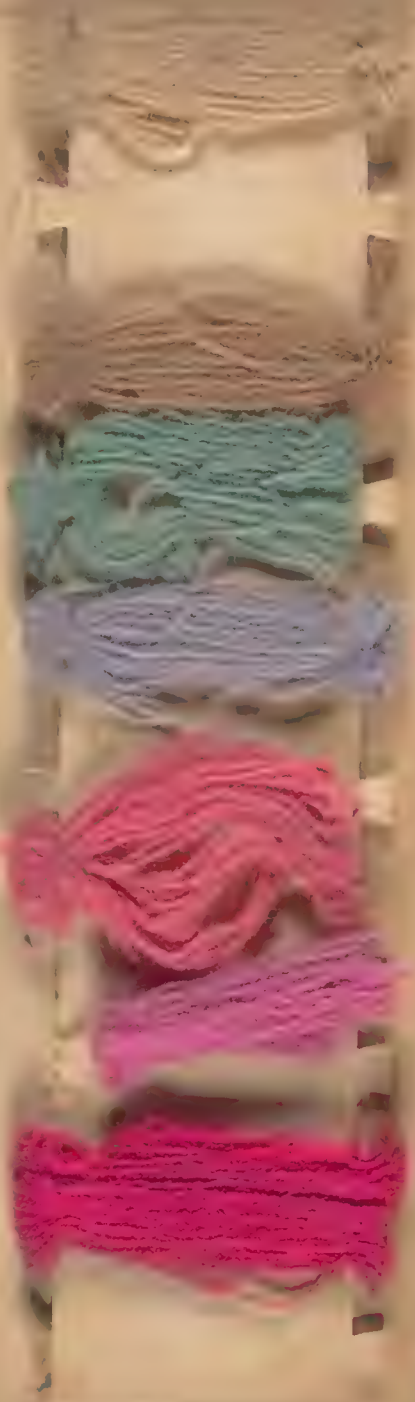
0.6 % Indigosol Violet ABBF
0.04% Indigosol O4B
1 % sulphocyanide of ammonia
0.7 % bichrome

No. 49

2 % Indigosol Golden Yellow IGK
2 % Indigosol Scarlet HB
2 % sulphocyanide of ammonia
2.8 % bichrome

No. 50

0.5 % Indigosol Blue AGG
0.36% Indigosol Scarlet IB
0.03% Indigosol Brown IRRD
1 % bichrome



Indigosols on Woolen Yarn

No. 51
0.2 % Indigospl Blue AGG
0.05% Indigosol Brilliant Pink I3B
3 % sulphocyanide of ammonia
1.3 % bichrome

No. 52
0.2 % Indigosol Scarlet HB
0.3 % Indigosol Pink IR extra
1 % sulphocyanide of ammonia
1.1 % bichrome

No. 53
2 % Indigosol Violet ABBF
0.2 % Indigosol Red Violet IRH
2 % sulphocyanide of ammonia
2 % bichrome

No. 54
0.5 % Indigosol Blue AGG
0.1 % Indigosol Green AB
1 % sulphocyanide of ammonia
0.7 % bichrome

No. 55
0.5 % Indigosol Red Violet IRH
0.15% Indigosol Violet ABBF
3 % sulphocyanide of ammonia
1.3 % bichrome

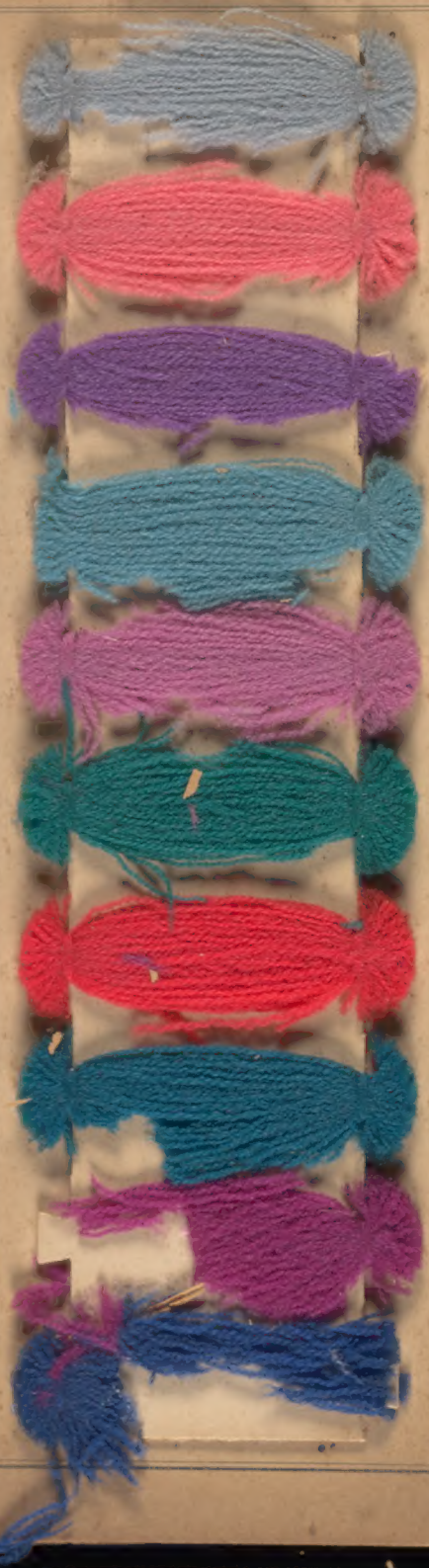
No. 56
2 % Indigosol Green AB
0.5 % Indigosol Blue AGG
1 % sulphocyanide of ammonia
2.2 % bichrome

No. 57
1.25% Indigosol Scarlet HB
1.25% Indigosol Pink IR extra
1 % sulphocyanide of ammonia
2.4 % bichrome

No. 58
3 % Indigosol O6B
0.4 % Indigosol Green AB
2 % sulphocyanide of ammonia
2.5 % bichrome

No. 59
2 % Indigosol Red Violet IRH
0.5 % Indigosol Violet ABBF
2 % sulphocyanide of ammonia
2.5 % bichrome

No. 60
3 % Indigosol O4B
0.5 % Indigosol Violet ABBF
2 % sulphocyanide of ammonia
2.5 % bichrome



GENERAL DYESTUFF CORPORATION

Sole Distributors in the U. S. A.

of the dyestuffs manufactured by

General Aniline Works, Inc.,
Albany, N. Y. and Grasselli, N. J.,

and by

I. G. Farbenindustrie Aktiengesellschaft
Frankfurt a. Main.

Indigosols on Woolen Yarn

No. 1
2 % Indigosol O
0.5% sodium nitrite

No. 2
7 % Indigosol O
1.2% sodium nitrite

No. 3
14 % Indigosol O
2 % sodium nitrite

No. 4
3 % Indigosol OR
0.6% sodium nitrite

No. 5
8 % Indigosol OR
1.2% sodium nitrite

No. 6
15 % Indigosol OR
2 % sodium nitrite

No. 7
0.5% Indigosol Golden Yellow IGK
1 % sulphocyanide of ammonia
1.1% bichrome

No. 8
2 % Indigosol Golden Yellow IGK
1 % sulphocyanide of ammonia
2.2% bichrome

No. 9
0.5% Indigosol Brown IRRD
0.7% bichrome

No. 10
2 % Indigosol Brown IRRD
2 % bichrome